Analytical Laboratory

13339 Hagers Ferry Road
Huntersville, NC 28078-7929
McGuire Nuclear Complex - MG03A2
Phone: 980-875-5245 Fax: 980-875-4349

Order Summary Report

Order Number: **J11120115**

Customer Name(s): Bill Kennedy, Melonie Martin, Wayne Chapman, Tom Johnson

Customer Address: 3195 Pine Hall Rd
Mailcode: Belews Steam Station
Belews Creek, NC 28012

Lab Contact: Jason C Perkins Phone: 980-875-5348

Report Authorized By: (Signature) Digitally signed by jay perkins DN: cn=jay perkins, o=Analytical Lab, ou, email=jay.perkins@duke-energy.com, c=US Date: 2012.01.05 14:51:08 -05'00' **Date:** 1/4/2012

Program Comments:

Please contact the Program Manager (Jason C Perkins) with any questions regarding this report.

Data Flags & Calculations:

Any analytical tests or individual analytes within a test flagged with a Qualifier indicate a deviation from the method quality system or quality control requirement. The qualifier description is found at the end of the Certificate of Analysis (sample results) under the qualifiers heading. All results are reported on a dry weight basis unless otherwise noted.

Data Package:

This data package includes analytical results that are applicable only to the samples described in this narrative. An estimation of the uncertainty of measurement for the results in the report is available upon request. This report shall not be reproduced, except in full, without the written consent of the Analytical Laboratory. Please contact the Analytical laboratory with any questions. The order of individual sections within this report is as follows:

Job Summary Report, Sample Identification, Technical Validation of Data Package, Analytical Laboratory Certificate of Analysis, Analytical Laboratory QC Reports, Sub-contracted Laboratory Results, Customer Specific Data Sheets, Reports & Documentation, Customer Database Entries, Test Case Narratives, Chain of Custody (COC)

Certification:

The Analytical Laboratory holds the following State Certifications : North Carolina (DENR) Certificate #248, South Carolina (DHEC) Laboratory ID # 99005. Contact the Analytical Laboratory for definitive information about the certification status of specific methods.

Sample ID's & Descriptions:

Sample ID	Plant/Station	Collection Date and Time	Collected By	Sample Description
2011026219	BELEWS	14-Dec-11 11:30 AM	DAVID MORRIS	FGD Purge Eff
2011026342	BELEWS	14-Dec-11 11:30 AM	DAVID MORRIS	EQ TANK EFF.
2011026343	BELEWS	14-Dec-11 11:30 AM	DAVID MORRIS	BIOREACTOR 1 INF.
2011026344	BELEWS	14-Dec-11 11:30 AM	DAVID MORRIS	BIOREACTOR 2 INF.
2011026345	BELEWS	14-Dec-11 11:30 AM	DAVID MORRIS	BIOREACTOR 2 EFF.
2011026346	BELEWS	14-Dec-11 11:30 AM	DAVID MORRIS	FILTER BLANK
2011026347	BELEWS	14-Dec-11 11:30 AM	DAVID MORRIS	Trip Blank
2011026356	BELEWS	14-Dec-11 11:40 AM	DAVID MORRIS	BIOREACTOR 1 INF.
2011026357	BELEWS	14-Dec-11 11:40 AM	DAVID MORRIS	HG BLANK BIOREACTOR 1 INF.
2011026358	BELEWS	14-Dec-11 11:50 AM	DAVID MORRIS	BIOREACTOR 2 INF.
2011026359	BELEWS	14-Dec-11 11:50 AM	DAVID MORRIS	Hg Blk BioReactor 2 Inf
2011026360	BELEWS	14-Dec-11 11:45 AM	DAVID MORRIS	BIOREACTOR 2 EFF.
2011026361	BELEWS	14-Dec-11 11:45 AM	DAVID MORRIS	Hg Blk BioReactor 2 Eff

13 Total Samples

Technical Validation Review

Checklist:

COC and .pdf report are in agreement with sample totals and analyses (compliance programs and procedures).	☑ Yes	☐ No
All Results are less than the laboratory reporting limits.	☐ Yes	☑ No
All laboratory QA/QC requirements are acceptable.	☑ Yes	☐ No
The Vendor Laboratories have been qualified by the Analytical Laboratory	Yes	

Report Sections Included:

- ☑ Job Summary Report
- ☑ Sample Identification
- ☑ Technical Validation of Data Package
- ☑ Analytical Laboratory Certificate of Analysis
- ☐ Analytical Laboratory QC Report
- ☑ Sub-contracted Laboratory Results
- ☐ Customer Specific Data Sheets, Reports, & Documentation
- ☐ Customer Database Entries
- ☑ Chain of Custody
- ☑ Electronic Data Deliverable (EDD) Sent Separately

Reviewed By: Mary Ann Ogle Date: 1/4/2012

Certificate of Laboratory Analysis

Order # J11120115

Site: FGD Purge Eff **Sample #: 2011026219**
Collection Date: 14-Dec-11 11:30 AM Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	Method	Analysis Date/Time	Analyst
INORGANIC IONS BY IC							
Bromide	**84**	mg/L		5	EPA 300.0	19-Dec-11 19:30	JAHERMA
MERCURY (COLD VAPOR) IN WATER							
Mercury (Hg)	**229**	ug/L		5	EPA 245.1	16-Dec-11 09:09	AGIBBS
TOTAL RECOVERABLE METALS BY ICP							
Boron (B)	**146**	mg/L		0.5	EPA 200.7	16-Dec-11 10:17	DJSULL1
DISSOLVED METALS BY ICP-MS							
Selenium (Se)	**419**	ug/L		10	EPA 200.8	20-Dec-11 10:55	MHH7131
TOTAL RECOVERABLE METALS BY ICP-MS							
Arsenic (As)	**170**	ug/L		10	EPA 200.8	21-Dec-11 09:43	MHH7131
Chromium (Cr)	**172**	ug/L		10	EPA 200.8	21-Dec-11 09:43	MHH7131
Copper (Cu)	**108**	ug/L		10	EPA 200.8	21-Dec-11 09:43	MHH7131
Nickel (Ni)	**166**	ug/L		10	EPA 200.8	21-Dec-11 09:43	MHH7131
Selenium (Se)	**4440**	ug/L		10	EPA 200.8	21-Dec-11 09:43	MHH7131
Silver (Ag)	**< 10.0**	ug/L		10	EPA 200.8	21-Dec-11 09:43	MHH7131
Zinc (Zn)	**181**	ug/L		20	EPA 200.8	21-Dec-11 09:43	MHH7131
SELENIUM SPECIATION							
Vendor Parameter	**Complete**				V_AS&C		
TOTAL DISSOLVED SOLIDS							
TDS	**15000**	mg/L		200	SM2540C	19-Dec-11 14:36	AGIBBS

Site: EQ TANK EFF. **Sample #: 2011026342**
Collection Date: 14-Dec-11 11:30 AM Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	Method	Analysis Date/Time	Analyst
MERCURY (COLD VAPOR) IN WATER							
Mercury (Hg)	**208**	ug/L		2.5	EPA 245.1	16-Dec-11 09:12	AGIBBS
TOTAL RECOVERABLE METALS BY ICP							
Boron (B)	**152**	mg/L		0.5	EPA 200.7	16-Dec-11 10:21	DJSULL1
DISSOLVED METALS BY ICP-MS							
Selenium (Se)	**180**	ug/L		10	EPA 200.8	20-Dec-11 10:55	MHH7131

Certificate of Laboratory Analysis

Order # J11120115

Site: EQ TANK EFF. **Sample #: 2011026342**
Collection Date: 14-Dec-11 11:30 AM Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	Method	Analysis Date/Time	Analyst
TOTAL RECOVERABLE METALS BY ICP-MS							
Arsenic (As)	**164**	ug/L		10	EPA 200.8	21-Dec-11 09:46	MHH7131
Chromium (Cr)	**169**	ug/L		10	EPA 200.8	21-Dec-11 09:46	MHH7131
Copper (Cu)	**106**	ug/L		10	EPA 200.8	21-Dec-11 09:46	MHH7131
Nickel (Ni)	**162**	ug/L		10	EPA 200.8	21-Dec-11 09:46	MHH7131
Selenium (Se)	**4160**	ug/L		10	EPA 200.8	21-Dec-11 09:46	MHH7131
Silver (Ag)	**< 10.0**	ug/L		10	EPA 200.8	21-Dec-11 09:46	MHH7131
Zinc (Zn)	**178**	ug/L		20	EPA 200.8	21-Dec-11 09:46	MHH7131

Site: BIOREACTOR 1 INF. **Sample #: 2011026343**
Collection Date: 14-Dec-11 11:30 AM Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	Method	Analysis Date/Time	Analyst
TOTAL RECOVERABLE METALS BY ICP							
Boron (B)	**146**	mg/L		0.5	EPA 200.7	16-Dec-11 10:25	DJSULL1
DISSOLVED METALS BY ICP-MS							
Selenium (Se)	**141**	ug/L		10	EPA 200.8	20-Dec-11 10:55	MHH7131
TOTAL RECOVERABLE METALS BY ICP-MS							
Arsenic (As)	**< 10.0**	ug/L		10	EPA 200.8	21-Dec-11 09:49	MHH7131
Chromium (Cr)	**< 10.0**	ug/L		10	EPA 200.8	21-Dec-11 09:49	MHH7131
Copper (Cu)	**< 10.0**	ug/L		10	EPA 200.8	21-Dec-11 09:49	MHH7131
Nickel (Ni)	**39.7**	ug/L		10	EPA 200.8	21-Dec-11 09:49	MHH7131
Selenium (Se)	**133**	ug/L		10	EPA 200.8	21-Dec-11 09:49	MHH7131
Silver (Ag)	**< 10.0**	ug/L		10	EPA 200.8	21-Dec-11 09:49	MHH7131
Zinc (Zn)	**< 20.0**	ug/L		20	EPA 200.8	21-Dec-11 09:49	MHH7131
SELENIUM SPECIATION							
Vendor Parameter	**Complete**				V_AS&C		

Site: BIOREACTOR 2 INF. **Sample #: 2011026344**
Collection Date: 14-Dec-11 11:30 AM Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	Method	Analysis Date/Time	Analyst
TOTAL RECOVERABLE METALS BY ICP							
Boron (B)	**138**	mg/L		0.5	EPA 200.7	16-Dec-11 10:29	DJSULL1

Certificate of Laboratory Analysis

Order # J11120115

Site: BIOREACTOR 2 INF. **Sample #: 2011026344**
Collection Date: 14-Dec-11 11:30 AM Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	Method	Analysis Date/Time	Analyst
TOTAL RECOVERABLE METALS BY ICP-MS							
Arsenic (As)	**< 10.0**	ug/L		10	EPA 200.8	21-Dec-11 09:52	MHH7131
Chromium (Cr)	**< 10.0**	ug/L		10	EPA 200.8	21-Dec-11 09:52	MHH7131
Copper (Cu)	**< 10.0**	ug/L		10	EPA 200.8	21-Dec-11 09:52	MHH7131
Nickel (Ni)	**< 10.0**	ug/L		10	EPA 200.8	21-Dec-11 09:52	MHH7131
Selenium (Se)	**14.5**	ug/L		10	EPA 200.8	21-Dec-11 09:52	MHH7131
Silver (Ag)	**< 10.0**	ug/L		10	EPA 200.8	21-Dec-11 09:52	MHH7131
Zinc (Zn)	**< 20.0**	ug/L		20	EPA 200.8	21-Dec-11 09:52	MHH7131

Site: BIOREACTOR 2 EFF. **Sample #: 2011026345**
Collection Date: 14-Dec-11 11:30 AM Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	Method	Analysis Date/Time	Analyst
INORGANIC IONS BY IC							
Bromide	**82**	mg/L		5	EPA 300.0	19-Dec-11 19:46	JAHERMA
MERCURY (COLD VAPOR) IN WATER							
Mercury (Hg)	**< 1.00**	ug/L		1	EPA 245.1	16-Dec-11 09:14	AGIBBS
TOTAL RECOVERABLE METALS BY ICP							
Boron (B)	**129**	mg/L		0.5	EPA 200.7	16-Dec-11 10:32	DJSULL1
TOTAL RECOVERABLE METALS BY ICP-MS							
Arsenic (As)	**< 5.00**	ug/L		5	EPA 200.8	21-Dec-11 09:55	MHH7131
Chromium (Cr)	**< 5.00**	ug/L		5	EPA 200.8	21-Dec-11 09:55	MHH7131
Copper (Cu)	**< 5.00**	ug/L		5	EPA 200.8	21-Dec-11 09:55	MHH7131
Nickel (Ni)	**< 5.00**	ug/L		5	EPA 200.8	21-Dec-11 09:55	MHH7131
Selenium (Se)	**< 5.00**	ug/L		5	EPA 200.8	21-Dec-11 09:55	MHH7131
Silver (Ag)	**< 5.00**	ug/L		5	EPA 200.8	21-Dec-11 09:55	MHH7131
Zinc (Zn)	**< 10.0**	ug/L		10	EPA 200.8	21-Dec-11 09:55	MHH7131
SELENIUM SPECIATION							
Vendor Parameter	**Complete**				V_AS&C		

Site: FILTER BLANK **Sample #: 2011026346**
Collection Date: 14-Dec-11 11:30 AM Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	Method	Analysis Date/Time	Analyst
DISSOLVED METALS BY ICP-MS							
Selenium (Se)	**< 1.000**	ug/L		1	EPA 200.8	20-Dec-11 10:55	MHH7131

Certificate of Laboratory Analysis

This report shall not be reproduced, except in full.

Order # J11120115

Site: Trip Blank — **Sample #: 2011026347**
Collection Date: 14-Dec-11 11:30 AM — Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	Method	Analysis Date/Time	Analyst
TOTAL RECOVERABLE METALS BY ICP							
Boron (B)	**< 0.050**	mg/L		0.05	EPA 200.7	16-Dec-11 10:13	DJSULL1
TOTAL RECOVERABLE METALS BY ICP-MS							
Arsenic (As)	**< 1.000**	ug/L		1	EPA 200.8	21-Dec-11 09:40	MHH7131
Chromium (Cr)	**< 1.000**	ug/L		1	EPA 200.8	21-Dec-11 09:40	MHH7131
Copper (Cu)	**< 1.000**	ug/L		1	EPA 200.8	21-Dec-11 09:40	MHH7131
Nickel (Ni)	**< 1.000**	ug/L		1	EPA 200.8	21-Dec-11 09:40	MHH7131
Selenium (Se)	**< 1.000**	ug/L		1	EPA 200.8	21-Dec-11 09:40	MHH7131
Silver (Ag)	**< 1.000**	ug/L		1	EPA 200.8	21-Dec-11 09:40	MHH7131
Zinc (Zn)	**< 2.00**	ug/L		2	EPA 200.8	21-Dec-11 09:40	MHH7131
SELENIUM SPECIATION							
Vendor Parameter	**Complete**				V_AS&C		

Site: BIOREACTOR 1 INF. — **Sample #: 2011026356**
Collection Date: 14-Dec-11 11:40 AM — Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	Method	Analysis Date/Time	Analyst
MERCURY 1631							
Vendor Parameter	**Complete**				V_BRAND		

Site: HG BLANK BIOREACTOR 1 INF. — **Sample #: 2011026357**
Collection Date: 14-Dec-11 11:40 AM — Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	Method	Analysis Date/Time	Analyst
MERCURY 1631							
Vendor Parameter	**Complete**				V_BRAND		

Site: BIOREACTOR 2 INF. — **Sample #: 2011026358**
Collection Date: 14-Dec-11 11:50 AM — Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	Method	Analysis Date/Time	Analyst
MERCURY 1631							
Vendor Parameter	**Complete**				V_BRAND		

Certificate of Laboratory Analysis

This report shall not be reproduced, except in full.

Order # J11120115

Site: Hg Blk BioReactor 2 Inf — **Sample #: 2011026359**
Collection Date: 14-Dec-11 11:50 AM — Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	Method	Analysis Date/Time	Analyst
MERCURY 1631							
Vendor Parameter	**Complete**				V_BRAND		

Site: BIOREACTOR 2 EFF. — **Sample #: 2011026360**
Collection Date: 14-Dec-11 11:45 AM — Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	Method	Analysis Date/Time	Analyst
MERCURY 1631							
Vendor Parameter	**Complete**				V_BRAND		

Site: Hg Blk BioReactor 2 Eff — **Sample #: 2011026361**
Collection Date: 14-Dec-11 11:45 AM — Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	Method	Analysis Date/Time	Analyst
MERCURY 1631							
Vendor Parameter	**Complete**				V_BRAND		

APPLIED SPECIATION AND CONSULTING, LLC

18804 Northcreek Parkway Bothell, WA, 98011
Tel: (425) 483-3300 Fax: (425) 483-9818
www.appliedspeciation.com

December 22, 2011

Jay Perkins
Duke Energy Analytical Laboratory
Mail Code MGO3A2 (Building 7405)
13339 Hagers Ferry Rd.
Huntersville, NC 28078
(704) 875-5245

Project: Belews – FGD WWTS Bi-Monthly Sampling) (LIMS # J11120115)

Dear Mr. Perkins,

Attached is the report associated with four (4) aqueous samples submitted for selenium speciation analysis on December 15, 2011. The samples were received in a sealed cooler at -0.7°C on December 16, 2011. Selenium speciation analysis was performed via ion chromatography inductively coupled plasma dynamic reaction cell mass spectrometry (IC-ICP-DRC-MS). Any issues associated with the analysis are addressed in the following report.

If you have any questions, please feel free to contact me at your convenience.

Sincerely,

Russell Gerads
Vice President
Applied Speciation and Consulting, LLC

Applied Speciation and Consulting, LLC

Report prepared for:

Jay Perkins
Duke Energy Analytical Laboratory
Mail Code MGO3A2 (Building 7405)
13339 Hagers Ferry Rd.
Huntersville, NC 28078

Project: Belews – FGD WWTS Bi-Monthly Sampling) (LIMS # J11120115)

December 22, 2011

1. Sample Reception

Four (4) aqueous samples in 125mL HDPE bottles (provided by Applied Speciation and Consulting) were submitted for selenium speciation analysis on December 15, 2011. The samples were received on December 16, 2011 in a sealed container at -0.7°C.

The samples were received in a laminar flow clean hood, void of trace metals contamination and ultra-violet radiation, and was designated a discrete sample identifier. An aliquot of each sample was filtered (0.45µm) and each filtrate was stored in a secure, monitored cryofreezer (maintained at a temperature of -80^{o}C) until selenium speciation analysis could be performed via ion chromatography inductively coupled plasma dynamic reaction cell mass spectrometry (IC-ICP-DRC-MS).

2. Sample Preparation

All sample preparation is performed in laminar flow clean hoods known to be free from trace metals contamination. All applied water for dilutions and sample preservatives are monitored for contamination to account for any biases associated with the sample results.

Selenium Speciation Analysis by IC-ICP-DRC-MS Prior to analysis, an aliquot of each sample was filtered with a syringe filter (0.45µm) and injected directly into a sealed autosampler vial. No further sample preparation was performed as any chemical alteration of a sample may shift the equilibrium of the system, resulting in changes in speciation ratios.

3. Sample Analysis

All sample analysis is preceded by a minimum of a five-point calibration curve spanning the entire concentration range of interest. Calibration curves are performed at the beginning of

each analytical day. All calibration curves, associated with each species of interest, are standardized by linear regression resulting in a response factor. All sample results are **instrument blank corrected** to account for any operational biases associated with the analytical platform.

Prior to sample analysis, all calibration curves are verified using second source standards which are identified as initial calibration verification standards (ICV).

Ongoing instrument performance is identified by the analysis of continuing calibration verification standards (CCV) and continuing calibration blanks (CCB) at a minimal interval of every ten analytical runs.

Selenium Speciation Analysis by IC-ICP-DRC-MS Each sample for selenium speciation analysis was analyzed by ion chromatography inductively coupled plasma dynamic reaction cell mass spectrometry (IC-ICP-DRC-MS) on December 16, 2011. An aliquot of each sample is injected onto an anion exchange column and mobilized by a basic (pH > 7) gradient. The eluting selenium species are then introduced into a radio frequency (RF) plasma where energy-transfer processes cause desolvation, atomization, and ionization. The ions are extracted from the plasma through a differentially-pumped vacuum interface and travel through a pressurized chamber (DRC) containing a specific reactive gas which preferentially reacts with interfering ions of the same target mass to charge ratios (m/z). A solid-state detector detects ions transmitted through the mass analyzer and the resulting current is processed by a data handling system.

Retention times for each eluting species are compared to known standards for species identification.

4. Analytical Issues

The overall analyses went well and no significant analytical issues were encountered. All quality control parameters associated with this sample were within acceptance limits.

The estimated method detection limits (eMDLs) for selenite, selenate, and selenocyanate are generated from replicate analyses of the lowest standard in the calibration curve. Not all selenium species are present in preparation blanks; therefore, eMDL calculations based on preparation blanks are artificially biased low.

The eMDL for methylseleninic acid and selenomethionine is calculated from the average eMDL of selenite, selenate, and selenocyanate. The calibration does not contain methylseleninic acid or selenomethionine due to impurities in these standards which would bias the results for other selenium species.

If you have any questions or concerns regarding this report, please feel free to contact me.

Sincerely,

Russell Gerads
Vice President
Applied Speciation and Consulting, LLC

Selenium Speciation Results for Duke Energy
Project Name: Belews - FGD WWTS Bi-Monthly Sampling)
Contact: Jay Perkins
LIMS #J11120115

Date: December 22, 2011
Report Generated by: Russell Gerads
Applied Speciation and Consulting, LLC

Sample Results

Sample ID	Se(IV)	Se(VI)	SeCN	MeSe(IV)	SeMe	Unknown Se Species (n)
FGD Purge Eff	54.1	85.8	7.6	ND (<1.9)	ND (<1.9)	0 (0)
BioReactor 1 Inf	19.3	92.0	ND (<0.39)	ND (<0.47)	ND (<0.47)	2.00 (1)
BioReactor 2 Eff	ND (<0.56)	ND (<0.47)	ND (<0.39)	ND (<0.47)	ND (<0.47)	0 (0)
Metals Trip Blk	ND (<0.11)	ND (<0.093)	ND (<0.078)	ND (<0.094)	ND (<0.094)	0 (0)

All results reflect the applied dilution and are reported in µg/L
ND = Not detected at the applied dilution
SeCN = Selenocyanate
MeSe(IV) = Methylseleninic acid
SeMe = Selenomethionine
Unknown Se Species = Total concentration of all unknown Se species observed by IC-ICP-MS
n = number of unknown Se species observed

Selenium Speciation Results for Duke Energy
Project Name: Belews - FGD WWTS Bi-Monthly Sampling)
Contact: Jay Perkins
LIMS #J11120115

Date: December 22, 2011
Report Generated by: Russell Gerads
Applied Speciation and Consulting, LLC

Quality Control Summary - Preparation Blank Summary

Analyte (µg/L)	PBW1	PBW2	PBW3	PBW4	Mean	StdDev	eMDL*	eMDL 10x	eMDL 50x	eMDL 200x
Se(IV)	0.000	0.000	0.000	0.000	0.000	0.000	0.011	0.11	0.56	2.2
Se(VI)	0.000	0.000	0.000	0.000	0.000	0.000	0.009	0.093	0.47	1.9
SeCN	0.000	0.000	0.000	0.000	0.000	0.000	0.008	0.078	0.39	1.6
MeSe(IV)	0.000	0.000	0.000	0.000	0.000	0.000	0.009	0.094	0.47	1.9
SeMe	0.000	0.000	0.000	0.000	0.000	0.000	0.009	0.094	0.47	1.9

eMDL = Estimated Method Detection Limit
*Please see narrative regarding eMDL calculations

Quality Control Summary - Certified Reference Materials

Analyte (µg/L)	CRM	True Value	Result	Recovery
Se(IV)	LCS	3.83	4.09	106.8
Se(VI)	LCS	3.79	4.18	110.1
SeCN	LCS	3.57	3.83	107.3
MeSe(IV)	LCS	2.59	2.52	97.4
SeMe	LCS	3.73	3.77	101.1

Selenium Speciation Results for Duke Energy
Project Name: Belews - FGD WWTS Bi-Monthly Sampling)
Contact: Jay Perkins
LIMS #J11120115

Date: December 22, 2011
Report Generated by: Russell Gerads
Applied Speciation and Consulting, LLC

Quality Control Summary - Matrix Duplicates

Analyte (µg/L)	Sample ID	Rep 1	Rep 2	Mean	RPD
Se(IV)	BioReactor 2 Eff	ND (<0.56)	ND (<0.56)	NC	NC
Se(VI)	BioReactor 2 Eff	ND (<0.47)	ND (<0.47)	NC	NC
SeCN	BioReactor 2 Eff	ND (<0.39)	ND (<0.39)	NC	NC
MeSe(IV)	BioReactor 2 Eff	ND (<0.47)	ND (<0.47)	NC	NC
SeMe	BioReactor 2 Eff	ND (<0.47)	ND (<0.47)	NC	NC

ND = Not detected at the applied dilution
NC = Value was not calculated due to one or more concentrations below the eMDL

Quality Control Summary - Matrix Spike/ Matrix Spike Duplicate

Analyte (µg/L)	Sample ID	Spike Conc	MS Result	Recovery	Spike Conc	MSD Result	Recovery	RPD
Se(IV)	BioReactor 2 Eff	278.0	266.0	95.7	278.0	261.6	94.1	1.6
Se(VI)	BioReactor 2 Eff	252.3	252.5	100.1	252.3	251.7	99.8	0.3
SeCN	BioReactor 2 Eff	228.8	211.8	92.6	228.8	213.0	93.1	0.6

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST FORM

Analytical Lab
Page 16 of 28

Duke Energy

Duke Energy Analytical Laboratory
Mail Code MGO3A2 (Building 7405)
13339 Hagers Ferry Rd
Huntersville, N. C. 28078
(704) 875-5245
Fax: (704) 875-4349

[19]Page 1 of 2
DISTRIBUTION
ORIGINAL to LAB,
COPY to CLIENT

Analytical Laboratory Use Only

ORDER# J111201L5 | MATRIX: OTHER | Samples Originating From | NC ___ SC ___
Logged By SA | Date & Time 12/14/11 1536 | SAMPLE PROGRAM: Ground Water ___ NPDES ___ Drinking Water ___ UST ___ RCRA Waste ___
Cooler Temp (C) 2.1.0

AS&C
PO#133241

Customer must Complete

[1]Project Name: Belews - FGD WWTS Bi-Monthly Sampling)		[2]Phone No:
[2] Client: Bill Kennedy, Melonie Martin, Wayne Chapman, Tom Johnson **		[4]Fax No:
[5]Business Unit:	[6]Process:	Mail Code:
[8]Oper. Unit:	[9]Res. Type:	[10]Reso. Center:

MR #

Customer to complete all appropriate non-shaded areas.

Sampling conducted: 2nd and 4th Wednesday

[16]Preserv.: 1=HCL 2=H_2SO_4 3=HNO_3 4=Ice 5=None

[16]Analyses Required

LAB USE ONLY [11]Lab ID	Se Speciation Bottle ID	[13]Sample Description or ID	Date	Time	Signature	[17]Comp.	[18]Grab	TDS 4	Hg - 245.1 3,4	Br (Dionex)	Metals* 4	Se, soluble (no dig.) 3,4								Se, speciation - vendor to AS&C (Important to place filled bottle back into both baggies) 4
201026219		FGD Purge Eff ●	12/14	13:30	Travis Thurston			1	1	1	1	1								1
342		EQ Tank Eff.	12/14	11:30	Travis Thurston				1		1	1								
343		BioReactor 1 Inf ●	12/14	11:30	Travis Thurston						1	1								1
344		BioReactor 2 Inf	12/14	11:30	Travis Thurston						1									
																				1
345		BioReactor 2 Eff ●	12/14	11:30	Travis Thurston				1	1	1									
346		Filter Blk	12/14	11:30	Travis Thurston							1								
347		Metals Trip Blk ●									1									1

Filtering of the Se is performed in the field please provide a filter blank too.

Received at 0.7°C 3pm 12/16/11

Customer to complete appropriate columns to right.

Customer to sign & date below - fill out from left to right.

1) Relinquished By: Travis Thurston	Date/Time: 12/14 11:40	2) Accepted By: [signature]	Date/Time: 12-14-11 1150
3) Relinquished By: [signature]	Date/Time: 12-14-11 1525	4) Accepted By: [signature]	Date/Time: 12-14-11 15:25
5)Relinquished By:	Date/Time:	6)Accepted By: [signature]	Date/Time: 12-17-11
7)Relinquished By:	Date/Time:	8)Accepted By:	Date/Time:
9)Seal/Locked By:	Date/Time:	10) Seal/Lock Opened By:	Date/Time:
11)Seal/Locked By:	Date/Time:	12)Seal/Lock Opened By:	Date/Time:

Customer, IMPORTANT!
Please indicate desired turnaround.

[22]Requested Turnaround
14 Days ___
*7 Days ___
*48 Hr ___
*Other ___
* Add. Cost Will Apply
12-22-11

Comments: * Poly ICP Ag, Cr, Cu, Ni, Se, Ag, Zn by IMS Digestions = TRM thomas.d.johnson@siemens.com

December 28, 2011

Duke Energy
ATTN: Jay Perkins
13339 Hagers Ferry Road
Huntersville NC 28078
jperkins@duke-energy.com

RE: Project DUK-HV1101 Client Project: J11120115

Dear Jay Perkins,

This report contains results for the 6 samples received by Brooks Rand Labs (BRL) on December 16, 2011. The samples were logged-in for the contracted analyses according to the chain-of-custody form(s). The samples were received, prepared, analyzed, and stored according to BRL SOPs and EPA methodology.

The results were method blank corrected as described in the calculations section of the relevant BRL SOP(s) and may have been evaluated using reporting limits that have been adjusted to account for sample aliquot size. Please refer to the *Sample Results* page for sample-specific MDLs, MRLs, and other details. All data is reported without qualification (with the exception of concentration qualifiers), and all associated quality control sample results meet the acceptance criteria.

BRL, an accredited laboratory, certifies that the reported results of all analyses for which BRL is NELAP accredited meet all NELAP requirements. For more details, please see the *Report Information* page in your report. Please feel free to contact me if you have any questions regarding this report.

Sincerely,

Tiffany Stilwater
Project Manager
tiffany@brooksrand.com

Project ID: DUK-HV1101
PM: Tiffany Stilwater

Client PM: Jay Perkins
Client PO: 141391

Report Information

Laboratory Accreditation

BRL is accredited by the *National Environmental Laboratory Accreditation Program* (NELAP) through the State of Florida Department of Health, Bureau of Laboratories (E87982) and is certified to perform many environmental analyses. BRL is also certified by many other states to perform environmental analyses. For a current list of our accreditations/certifications, please visit our website at <http://www.brooksrand.com/default.asp?contentID=586>. Results reported relate only to the samples listed in the report.

Field Quality Control Samples

Please be notified that certain EPA methods require the collection of field quality control samples of an appropriate type and frequency; failure to do so is considered a deviation from some methods and for compliance purposes should only be done with the approval of regulatory authorities. Please see the specific EPA methods for details regarding required field quality control samples.

Common Abbreviations

BLK	method blank	**MS**	matrix spike
BRL	Brooks Rand Labs	**MSD**	matrix spike duplicate
BS	laboratory fortified blank	**ND**	non-detect
CAL	calibration standard	**NR**	non-reportable
CCV	continuing calibration verification	**PS**	post preparation spike
COC	chain of custody record	**REC**	percent recovery
CRM	certified reference material	**RPD**	relative percent difference
D	dissolved fraction	**RSD**	relative standard deviation
DUP	duplicate	**SCV**	secondary calibration verification
ICV	initial calibration verification	**SOP**	standard operating procedure
MDL	method detection limit	**SRM**	standard reference material
MRL	method reporting limit	**T**	total recoverable fraction

Definition of Data Qualifiers

(Effective 9/23/09)

B Detected by the instrument, the result is > the MDL but ≤ the MRL. Result is reported and considered an estimate.
E An estimated value due to the presence of interferences. A full explanation is presented in the narrative.
H Holding time and/or preservation requirements not met. Result is estimated.
J Estimated value. A full explanation is presented in the narrative.
J-M Duplicate precision (RPD) for associated QC sample was not within acceptance criteria. Result is estimated.
J-N Spike recovery for associated QC sample was not within acceptance criteria. Result is estimated.
M Duplicate precision (RPD) was not within acceptance criteria. Result is estimated.
N Spike recovery was not within acceptance criteria. Result is estimated.
R Rejected, unusable value. A full explanation is presented in the narrative.
U Result is ≤ the MDL or client requested reporting limit (CRRL). Result reported as the MDL or CRRL.
X Result is not BLK-corrected and is within 10x the absolute value of the highest detectable BLK in the batch. Result is estimated.

These qualifiers are based on those previously utilized by Brooks Rand, Ltd., those found in the EPA SOW ILM03.0, Exhibit B, Section III, pg. B-18, and the USEPA Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses; USEPA; July 2002. These supersede all previous qualifiers ever employed by BRL.

Project ID: DUK-HV1101
PM: Tiffany Stilwater

Client PM: Jay Perkins
Client PO: 141391

Sample Information

Sample	Lab ID	Report Matrix	Type	Sampled	Received
BioReactor 1 Inf	1151039-01	Influent	Sample	12/14/2011	12/16/2011
Hg Blk BioReactor 1 Inf	1151039-02	DIW	Field Blank	12/14/2011	12/16/2011
BioReactor 2 Inf	1151039-03	Influent	QC Sample	12/14/2011	12/16/2011
Hg Blk BioReactor 2 Inf	1151039-04	DIW	Field Blank	12/14/2011	12/16/2011
BioReactor 2 Eff	1151039-05	Effluent	Sample	12/14/2011	12/16/2011
Hg Blk BioReactor 2 Eff	1151039-06	DIW	Field Blank	12/14/2011	12/16/2011

Batch Summary

Analyte	Lab Matrix	Method	Prepared	Analyzed	Batch	Sequence
Hg	Water	EPA 1631	12/19/2011	12/20/2011	B112132	1100906

Project ID: DUK-HV1101
PM: Tiffany Stilwater

Client PM: Jay Perkins
Client PO: 141391

Sample Results

Sample	Analyte	Report Matrix	Fraction	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
BioReactor 1 Inf										
1151039-01	Hg	Influent	T	161		1.52	4.04	ng/L	B112132	1100906
BioReactor 2 Eff										
1151039-05	Hg	Effluent	T	39.4		0.61	1.61	ng/L	B112132	1100906
BioReactor 2 Inf										
1151039-03	Hg	Influent	T	102		1.52	4.04	ng/L	B112132	1100906
Hg Blk BioReactor 1 Inf										
1151039-02	Hg	DIW	T	0.15	U	0.15	0.40	ng/L	B112132	1100906
Hg Blk BioReactor 2 Eff										
1151039-06	Hg	DIW	T	0.15	U	0.15	0.40	ng/L	B112132	1100906
Hg Blk BioReactor 2 Inf										
1151039-04	Hg	DIW	T	0.15	U	0.15	0.40	ng/L	B112132	1100906

Project ID: DUK-HV1101
PM: Tiffany Stilwater

Client PM: Jay Perkins
Client PO: 141391

Accuracy & Precision Summary

Batch: B112132
Lab Matrix: Water
Method: EPA 1631

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B112132-SRM1	**Certified Reference Material (1149037, NIST 1641d 1000x dilution)**						
	Hg		15.68	15.29	ng/L	98% 85-115	
B112132-MS2	**Matrix Spike (1151039-03)**						
	Hg	102.3	505.1	664.3	ng/L	111% 71-125	
B112132-MSD2	**Matrix Spike Duplicate (1151039-03)**						
	Hg	102.3	505.1	648.2	ng/L	108% 71-125	2% 24
B112132-MS3	**Matrix Spike (1151039-05)**						
	Hg	39.35	177.4	228.6	ng/L	107% 71-125	
B112132-MSD3	**Matrix Spike Duplicate (1151039-05)**						
	Hg	39.35	180.9	226.1	ng/L	103% 71-125	1% 24

Project ID: DUK-HV1101
PM: Tiffany Stilwater

Client PM: Jay Perkins
Client PO: 141391

Method Blanks & Reporting Limits

Batch: B112132
Matrix: Water
Method: EPA 1631
Analyte: Hg

Sample	Result	Units
B112132-BLK1	0.06	ng/L
B112132-BLK2	0.08	ng/L
B112132-BLK3	0.06	ng/L
B112132-BLK4	0.04	ng/L

Average: 0.06 **Standard Deviation:** 0.02 **MDL:** 0.15
Limit: 0.50 **Limit:** 0.10 **MRL:** 0.40

Project ID: DUK-HV1101
PM: Tiffany Stilwater

Client PM: Jay Perkins
Client PO: 141391

Instrument Calibration

Sequence: 1100906
Instrument: THG-10
Date: 12/20/2011
Analyte: Hg

Total Mercury and Mercury Speciation by CVAFS
Method: EPA 1631

Lab ID	True Value	Result	Units	REC & Limits	
1100906-IBL1		3.72	pg of Hg		
1100906-IBL2		3.49	pg of Hg		
1100906-IBL3		3.46	pg of Hg		
1100906-IBL4		4.98	pg of Hg		
1100906-CAL1	25.00	24.38	pg of Hg	98%	
1100906-CAL2	100.0	98.22	pg of Hg	98%	
1100906-CAL3	500.0	482.6	pg of Hg	97%	
1100906-CAL4	2500	2687	pg of Hg	107%	
1100906-CAL5	10000	10100	pg of Hg	101%	
1100906-ICV1	1568	1529	pg of Hg	98%	85-115
1100906-CCB1		6.98	pg of Hg		
1100906-CCV1	500.0	532.2	pg of Hg	106%	77-123
1100906-CCV2	500.0	515.4	pg of Hg	103%	77-123
1100906-CCV3	500.0	514.5	pg of Hg	103%	77-123

Project ID: DUK-HV1101
PM: Tiffany Stilwater

Client PM: Jay Perkins
Client PO: 141391

Sample Containers

Lab ID: 1151039-01
Sample: BioReactor 1 Inf
Report Matrix: Influent
Sample Type: Sample
Collected: 12/14/2011
Received: 12/16/2011

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Bottle FLPE Hg-T	250 mL	71470160 10	none	n/a		Cooler

Lab ID: 1151039-02
Sample: Hg Blk BioReactor 1 Inf
Report Matrix: DIW
Sample Type: Field Blank
Collected: 12/14/2011
Received: 12/16/2011

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Bottle FLPE Hg-T	250 mL	71470160 10	none	n/a		Cooler

Lab ID: 1151039-03
Sample: BioReactor 2 Inf
Report Matrix: Influent
Sample Type: QC Sample
Collected: 12/14/2011
Received: 12/16/2011

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Bottle FLPE Hg-T	250 mL	71470160 10	none	n/a		Cooler

Lab ID: 1151039-04
Sample: Hg Blk BioReactor 2 Inf
Report Matrix: DIW
Sample Type: Field Blank
Collected: 12/14/2011
Received: 12/16/2011

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Bottle FLPE Hg-T	250 mL	71470160 10	none	n/a		Cooler

Lab ID: 1151039-05
Sample: BioReactor 2 Eff
Report Matrix: Effluent
Sample Type: Sample
Collected: 12/14/2011
Received: 12/16/2011

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Bottle FLPE Hg-T	250 mL	71470160 10	none	n/a		Cooler

Lab ID: 1151039-06
Sample: Hg Blk BioReactor 2 Eff
Report Matrix: DIW
Sample Type: Field Blank
Collected: 12/14/2011
Received: 12/16/2011

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Bottle FLPE Hg-T	250 mL	71470160 10	none	n/a		Cooler

Project ID: DUK-HV1101
PM: Tiffany Stilwater

Client PM: Jay Perkins
Client PO: 141391

Shipping Containers

Cooler

Received: December 16, 2011 9:00
Tracking No: 4726 7966 6868 via FedEx
Coolant Type: Ice
Temperature: 1.7 °C

Description: Cooler
Damaged in transit? No
Returned to client? No

Custody seals present? No
Custody seals intact? No
COC present? Yes

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST FORM

1151039

Duke Energy SM

Duke Energy Analytical Laboratory
Mail Code MGO3A2 (Building 7405)
13339 Hagers Ferry Rd
Huntersville, N. C. 28078
(704) 875-5245
Fax: (704) 875-4349

Analytical Laboratory Use Only

ORDER # J1112015 | Sample Class OTHER | Samples Originating From NC___ SC___

Logged By B.A | Date & Time 12/14/11 1536

V [redacted] | Brooks Rand | PO#141391

Cooler Temp (C) 4.0

SAMPLE PROGRAM: Water___ Ground___ NPDES___ Drinking Water___ UST___ RCRA Waste___

[19]Page 2 of 2
DISTRIBUTION
ORIGINAL to LAB,
COPY to CLIENT

Customer must Complete

1)Project Name: Belews - FGD WWTS (2011, Bi-Weekly Sampling)		2)Phone No:
2) Client: Bill Kennedy, Melonie Martin, Wayne Chapman, Tom Johnson *		4)Fax No:
5)Business Unit:	6)Process:	Mail Code:
8)Oper. Unit:	9)Res. Type:	10)Reso. Center:

[15]Preserv.:1=HCL 2=H_2SO_4 3=HNO_3 4=Ice 5=None

MR #

Customer to complete all appropriate non-shaded areas.

Sampling conducted: 2nd Wednesday each month

LAB USE ONLY [11]Lab ID	Se Speciation Bottle ID	[13]Sample Description or ID	Date	Time	Signature	[17]Comp.	[18]Grab	[16]Analyses Required: Hg 1631 (sample 2nd week only)	5
20110263 56		BioReactor 1 Inf	12/14/11	1140			X	1	
57		Hg Blk BioReactor 1 Inf		1				1	
58		BioReactor 2 Inf		1150				1	
59		Hg Blk BioReactor 2 Inf		1				1	
60		BioReactor 2 Eff		1145				1	
61		Hg Blk BioReactor 2 Eff		1				1	

Customer to complete appropriate columns to right

Use the Bioreactor 2 Inf or EFF sample as the MS/MSD

Customer to sign & date below - fill out from left to right.

1) Relinquished By: David Main	Date/Time: 12/14/11 1525	2) Accepted By: Carl Marma	Date/Time: 12-14-11 1525
3) Relinquished By	Date/Time	4) Accepted By:	Date/Time: 12/16/11 0900
5)Relinquished By	Date/Time	6)Accepted By:	Date/Time
7)Relinquished By	Date/Time	8)Accepted By:	Date/Time
9)Seal/Locked By	Date/Time	10) Seal/Lock Opened By	Date/Time
11)Seal/Locked By	Date/Time	12)Seal/Lock Opened By	Date/Time

Comments

* Metals=As, Ag, B, Cu, Cr, Ni, Se, Zn *thomas.d.johnson@siemens.com

Customer, IMPORTANT! Please indicate desired turnaround.

[22]Requested Turnaround

14 Days ____
*7 Days ____
*48 Hr ____
*Other ____
* Add. Cost Will Apply

12-22-11

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST FORM

Duke Energy

Duke Energy Analytical Laboratory
Mail Code MGO3A2 (Building 7405)
13339 Hagers Ferry Rd
Huntersville, N. C. 28078
(704) 875-5245
Fax: (704) 875-4349

Analytical Laboratory Use Only

ORDER# J11201L5 | MATRIX: OTHER | Samples Originating From NC___ SC___

Logged By [illegible] | Date & Time 12/14/11 1536 | SAMPLE PROGRAM: Ground Water___ NPDES___ Drinking Water___ UST___ RCRA Waste___

AS&C PO#133241

<1.0 Cooler Temp (C)

[19]Page 1 of 2
DISTRIBUTION
ORIGINAL to LAB,
COPY to CLIENT

Customer must Complete

1)Project Name: Belews - FGD WWTS Bi-Monthly Sampling) | 2)Phone No:
2) Client: Bill Kennedy, Melonie Martin, Wayne Chapman, Tom Johnson ** | 4)Fax No:
5)Business Unit: | 6)Process: | Mail Code:
8)Oper. Unit: | 9)Res. Type: | 10)Reso. Center:

MR #

Customer to complete all appropriate non-shaded areas.

Sampling conducted: 2nd and 4th Wednesday

[15]Preserv.: 1=HCl 2=H_2SO_4 3=HNO_3 4=Ice 5=None

[16]Analyses Required

LAB USE ONLY [11]Lab ID	Se Speciation Bottle ID	[13]Sample Description or ID	Date	Time	Signature	[17]Comp.	[18]Grab	TDS	Hg - 245.1	Br (Dionex)	Metals*	Se, soluble (no dig.)	Se, speciation - vendor to AS&C (Important to place filled bottle back into both baggies)
2011026219		FGD Purge Eff	12/14	13:30	Travis Thorton			1	1	1	1	1	1
342		EQ Tank Eff.	12/14	11:30	Travis Thorton				1		1	1	
343		BioReactor 1 Inf	12/14	11:30	Travis Thorton						1	1	1
344		BioReactor 2 Inf	12/14	11:30	Travis Thorton						1		
345		BioReactor 2 Eff	12/14	11:30	Travis Thorton				1	1	1		1
346		Filter Blk	12/14	11:30	Travis Thorton							1	
347		Metals Trip Blk									1		1

Filtering of the Se is performed in the field please provide a filter blank too.

Customer to complete appropriate columns to right

Customer to sign & date below - fill out from left to right.

	Date/Time		Date/Time
1) Relinquished By: Travis Thorton	12/14 11:40	2) Accepted By: [illegible]	12-14-11 1150
3) Relinquished By: [illegible]	12-14-11 1525	4) Accepted By: G C Sharma	12-14-11 15:25
5)Relinquished By: [illegible]	12/15/11 1300	6)Accepted By:	
7)Relinquished By		8)Accepted By:	
9)Seal/Locked By: [illegible]	12/15/11 1300	10) Seal/Lock Opened By	
11)Seal/Locked By		12)Seal/Lock Opened By	

Customer, IMPORTANT! Please indicate desired turnaround.

[22]Requested Turnaround
14 Days _____
*7 Days _____
*48 Hr _____
*Other _____
* Add. Cost Will Apply

Comments
* B by ICP As, Cr, Cu, Ni, Se, Ag, Zn by IMS Digestions = TRM thomas.d.johnson@siemens.com

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST FORM

Duke Energy

Duke Energy Analytical Laboratory
Mail Code MGO3A2 (Building 7405)
13339 Hagers Ferry Rd
Huntersville, N. C. 28078
(704) 875-5245
Fax: (704) 875-4349

Analytical Laboratory Use Only

ORDER # J1120115 | Sample Class OTHER | Samples Originating From NC___ SC___

Logged By R.A | Date & Time 12/14/11 1536

Vo: Brooks Rand
PO: PO#141391

Cooler Temp (C) 4.0

SAMPLE PROGRAM: Water ___ Ground ___ NPDES ___ Drinking Water ___ UST ___ RCRA Waste ___

MR #

[19] DISTRIBUTION
ORIGINAL to LAB,
COPY to CLIENT

Customer must Complete

1)Project Name: Belews - FGD WWTS (2011, Bi-Weekly Sampling)		2)Phone No:
2) Client: Bill Kennedy, Melonie Martin, Wayne Chapman, Tom Johnson *		4)Fax No:
5)Business Unit:	6)Process:	Mail Code:
8)Oper. Unit:	9)Res. Type:	10)Reso. Center:

[18] Preserv.: 1=HCL 2=H_2SO_4 3=HNO_3 4=Ice 5=None

[16] Analyses Required

Customer to complete all appropriate non-shaded areas.

Sampling conducted: 2nd Wednesday each month

Customer to complete appropriate columns to right

LAB USE ONLY [11] Lab ID	Se Speciation Bottle ID	[13] Sample Description or ID	Date	Time	Signature	[17] Comp.	[18] Grab	Hg 1631 (sample 2nd week only)
					Dave Mon		X	
2011026356		BioReactor 1 Inf	12-14-11	1140				1
57		Hg Blk BioReactor 1 Inf		↓				1
58		BioReactor 2 Inf		1150				1
59		Hg Blk BioReactor 2 Inf		=				1
60		BioReactor 2 Eff		1145				1
61		Hg Blk BioReactor 2 Eff		↓				1

Use the Bioreactor 2 Inf or EFF sample as the MS/MSD

Customer to sign & date below - fill out from left to right.

1) Relinquished By: Dave Mon	Date/Time: 12-14-11 1525	2) Accepted By: Carl Marva	Date/Time: 12-14-11 1525
3) Relinquished By: R. Harris	Date/Time: 12/15/11 1300	4) Accepted By	Date/Time
5)Relinquished By	Date/Time	6)Accepted By:	Date/Time
7)Relinquished By	Date/Time	8)Accepted By:	Date/Time
9)Seal/Locked By: R. Harris	Date/Time: 12/15/11 1300	10) Seal/Lock Opened By	Date/Time
11)Seal/Locked By	Date/Time	12)Seal/Lock Opened By	Date/Time

Customer, IMPORTANT! Please indicate desired turnaround.

[22] Requested Turnaround
14 Days ___
*7 Days ___
*48 Hr ___
*Other ___
* Add. Cost Will Apply

Comments

* Metals=As, Ag, B, Cu, Cr, Ni, Se, Zn *thomas.d.johnson@siemens.com